

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Previously Presented) Method for the production of a polyurethane moulded body comprising:

- (a) preparing a mixture of
 - (i) isocyanate and
 - (ii) unsaturated monomers having both reactive double bonds and hydroxyl groups,as starting components, wherein the monomers containing hydroxyl groups are used in a stoichiometric ratio or in less than the stoichiometric amount relative to isocyanate; and wherein at least one of the starting components is at least trifunctional with regard to NCO groups and the other one is at least difunctional with regard to OH groups, or at least one of the starting compounds is at least trifunctional with regard to the OH groups and the other one is at least difunctional with regard to the NCO groups;
- (b) subjecting the mixture to a polyaddition reaction that is not triggered by radicals thereby generating a crosslinked, flexible, radical-polymerisable polyurethane preform having a content of nonextractable, reactive double bonds - as determined by DSC - of at least 0.5 mmole/g;

wherein said preform is free of extractable monomers with reactive double bonds;

wherein the mixture before or during the polyaddition reaction is subjected to a shaping step other than comminuting to a powder; and

(c) curing the shaped crosslinked and flexible polyurethane preform by radical-triggered polymerisation of the reactive double bonds, yielding a cured shaped body having a polyurethane matrix.

2. (Previously Presented) The method of claim 1 wherein the mixture of starting components comprises (i) isocyanate and (ii) (meth)acrylate containing hydroxyl groups in a ratio of about 1 : 1 between the OH and NCO groups.

3. (Previously Presented) The method of claim 1 wherein the curing by radical-triggered polymerisation occurs without toxic emissions.

4. (Previously Presented) The method of claim 1 wherein the preform is produced in the shape of a film, tape, ribbon, cord, or strand.

5. (Previously Presented) The method of claim 1 wherein to the starting components at least one of the following components is added: a filler, a fibre material, a coloured pigment.

6. (Previously Presented) The method of claim 1 wherein curing of the preform occurs by radical polymerisation of the free double bonds while applying at least one measure selected from the group consisting of elevated pressure, elevated temperature, irradiation with microwaves, irradiation with blue light, irradiation with UV light, and ionizing radiation.
7. (Previously Presented) The method of claim 1 wherein to the mixture of starting components at least one catalyst for triggering and/or accelerating a radical induced polymerisation of the reactive double bonds is added in an amount of up to 5 % by weight of the starting mixture.
8. (Previously Presented) The method of claim 1 wherein two or more preforms are bonded together while applying elevated pressure and elevated temperature to yield composites or laminates and cured.
9. (Previously Presented) The method of claim 8 wherein fibre material is inserted between the preforms prior to definite curing by radical polymerisation.
10. (Previously Presented) The method of claim 5 wherein the filler is added in a concentration of at most 80 % by weight of the total weight of the polyurethane material.

11. (Previously Presented) The method of claim 5 wherein the fibre material is present in the form of unidirectional fibre strands, woven or nonwoven fibre fabric.

12. (Original) The method of claim 11 wherein the fibre material prior to the polyaddition reaction is impregnated with a mixture of the starting components, and then moulded in the form of plates or film and subjected to the polyaddition reaction.

13. (Previously Presented) The method of claim 6 wherein the curing of the preform is carried out applying at least one condition or measure selected from the group consisting of a pressure of 2 to 10 bar, a temperature of 80 to 150°C, irradiation with light having a wavelength of 300 to 500 nm, and irradiation with microwaves having a wavelength of 1 to 1000 mm.

14 - 15. (Canceled)

16. (Previously Presented) The moulded body of claim 51, characterised in that it is of a nature selected from the group consisting of colourless, translucent, air permeable, and foamed.

17. (Previously Presented) The moulded body of claim 51, characterised in that it contains at least one additive selected from the group consisting of a filler, fibre material, and coloured pigment.

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18. (Previously Presented) The moulded body of claim 51, characterised in that it is present as a composite or laminate formed from at least two curable preforms.

19 - 21. (Canceled)

22. (Previously Presented) The method of claim 1 wherein the moulded body is selected from the group consisting of toys, utensils, art objects, decorative objects, articles for medical and dental applications, and elements for technical purposes in civil engineering and mechanical design, said elements for technical purposes being selected from the group consisting of pipe connections, ways, borders, sheathing, mounting supports, sound, heat and electrical insulations, structural elements, components, casts of objects, moulds, optical wave guides, tool components, covers, and protective films.

23-24. (Canceled)

25. (Previously Presented) The method of claim 1 wherein the preform is elastic.

26. (Canceled)

27. (Previously Presented) The method of claim 1 wherein the monomers comprise (meth)acrylate that contains hydroxyl groups.

28. (Previously Presented) The method of claim 1 wherein curing of the preform via radical polymerisation is accomplished during or after a further step of mechanical forming other than comminuting to a powder of the preform.

29. (Previously Presented) The method of claim 28 wherein said further step of mechanical forming of the preform is accomplished without removal of material.

30. (Previously Presented) The method of claim 28 wherein said further step of mechanical forming of the preform comprises at least one action selected from the group consisting of bending, twisting, pressing, rolling, and deep-drawing.

31 - 32. (Canceled)

33. (Previously Presented) Method according to claim 1, wherein the monomers with reactive double bonds comprise at least one compound selected from the group consisting of acrylate and methacrylate.

34. (Previously Presented) Method according to claim 1, wherein the shaping step comprises at least one method selected from the group consisting of casting, pressing, rolling, extruding, deep-drawing, and foaming.
35. (Previously Presented) Method according to claim 1, wherein the preform is elastic.
36. (Previously Presented) Method according to claim 1, wherein the preform is cured after a further forming step other than comminuting to a powder.
37. (Previously Presented) Method according to claim 36, wherein the further forming step is accomplished without removal of material.
38. (Previously Presented) Method according to claim 36, wherein the further forming step is selected from the group consisting of bending, twisting, pressing, rolling, deep-drawing, cutting, carving, grinding, and scraping.
39. (Canceled)

40. (Previously Presented) Method according to claim 7, wherein the catalyst is a hot-curing catalyst or a photocatalyst.
41. (Previously Presented) Method according to claim 7, wherein the catalyst is added in an amount of 0.1 to 1% by weight.
42. (Previously Presented) Method according to claim 8, wherein the preforms are in the form of films, tapes, ribbons, or plates.
43. (Previously Presented) Method according to claim 8, wherein the preforms are piled up as layers or glued together with the aid of an adhesion promoter.
44. (Previously Presented) Method according to claim 8, wherein the bonded preforms are cured with the aid of light.
45. (Previously Presented) Method according to claim 9, wherein the fibre material is in the form of woven or nonwoven fibre fabric.
46. (Previously Presented) Method according to claim 10, wherein the filler is added at a concentration of 20 to 75% by weight.

47. (Previously Presented) Method according to claim 5, wherein the fibre material is selected from the group consisting of glass fibres and carbon fibres.

48. (Previously Presented) Molded body according to claim 51, wherein the monomers comprise (meth)acrylate containing hydroxyl groups.

49. (Previously Presented) Molded body according to claim 51, wherein the polyurethane matrix contains additives.

50. (Previously Presented) Molded body according to claim 51, which exhibits a surface treatment selected from the group consisting of coloration, painting, and texturing.

51. (Previously Presented) A polyurethane moulded body prepared by a process comprising:

(a) preparing a mixture of

(i) isocyanate and

(ii) unsaturated monomers having both reactive double bonds and hydroxyl

groups,

as starting components, wherein the monomers containing hydroxyl groups are used in a

stoichiometric ratio or in less than the stoichiometric amount relative to isocyanate; wherein at

least one of the starting components is at least trifunctional with regard to NCO groups and the other one is at least difunctional with regard to OH groups, or at least one of the starting materials is at least trifunctional with regard to the OH groups and the other one is at least difunctional with regard to the NCO groups;

(b) subjecting the mixture to a polyaddition reaction that is not triggered by radicals thereby generating a crosslinked, flexible, radical-polymerisable polyurethane preform having a content of nonextractable, reactive double bonds - as determined by DSC - of at least 0.5 mmole/g;

wherein said preform is free of extractable monomers with reactive double bonds;

and wherein the mixture before or during the polyaddition reaction is subjected to a shaping step other than comminuting to a powder; and

(c) curing the shaped crosslinked and flexible polyurethane preform by radical-triggered polymerisation of the reactive double bonds, yielding a cured shaped body having a polyurethane matrix.

52. (Previously Presented) A method for the production of a foamed polyurethane moulded body comprising:

(a) preparing a mixture of

(i) isocyanate and

(ii) unsaturated monomers having both reactive double bonds and hydroxyl groups,

as starting components, wherein the monomers containing hydroxyl groups are used in a stoichiometric ratio or in less than the stoichiometric amount relative to isocyanate; and wherein at least one of the starting components is at least trifunctional with regard to NCO groups and the other one is at least difunctional with regard to OH groups, or at least one of the starting components is at least trifunctional with regard to the OH groups and other one is at least difunctional with regard to the NCO groups;

(b) subjecting the mixture to a polyaddition reaction that is not triggered by radicals thereby generating a crosslinked, flexible, radical-polymerisable polyurethane preform having a content of nonextractable, reactive double bonds - as determined by DSC - of at least 0.5 mmole/g;

wherein said preform is free of extractable monomers with reactive double bonds and silicon dioxide;

wherein the mixture before or during the polyaddition reaction is subjected to a foaming step; and

(c) curing the foamed polyurethane preform by radical-triggered polymerisation of the reactive double bonds, yielding a cured foamed body having a polyurethane matrix.

53. (New) A polyurethane moulded body prepared by a process comprising:

(a) preparing a mixture of

(i) isocyanate and

(ii) unsaturated monomers having both reactive double bonds and hydroxyl

groups,

as starting components wherein at least one of the starting components is at least trifunctional with regard to NCO groups and the other one is at least difunctional with regard to OH groups, or at least one of the starting components is at least trifunctional with regard to the OH groups and other one is at least difunctional with regard to the NCO groups;

(b) subjecting the mixture to a polyaddition reaction that is not triggered by radicals thereby generating a crosslinked, flexible, radical-polymerisable polyurethane preform having a content of nonextractable, reactive double bonds - as determined by DSC - of at least 0.5 mmole/g;

and wherein the mixture before or during the polyaddition reaction is subjected to a foaming step; and

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(c) curing the foamed crosslinked and flexible polyurethane preform by radical-triggered polymerization of the reactive double bonds, yielding a cured foamed body having a polyurethane matrix.